CTN Test Report

CALS TEST NETWORK 91-007

AFTB-ID-90-014

Technical Publication Transfer Test with Litton Data Systems: MIL-M-28001 (SGML)

Quick Short Test Report

October 22, 1990

Prepared for
Air Force Logistics Command
Air Force CALS Test Bed (LMSC/SBC)
Wright-Patterson AFB, OH 45433-5000

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Technical Publication Transfer with Litton Computer Services: MIL-M-28001 (SGML)

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Prepared for

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1. Introduction

1.1 Background

The DoD Computer-aided Acquisition and Logistics Support (CALS) Test Network (CTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The CTN is a DoD-sponsored confederation of voluntary participants from industry and government managed by the Air Force Logistics Command.

The primary objective of the CTN is to evaluate the effectiveness of the CALS standards (Standards) for technical data interchange and to demonstrate the technical capabilities and operational suitability of those Standards. Two general categories of tests are performed to evaluate the Standards, formal and informal. Formal tests are large, comprehensive tests that follow a written test plan, require specific authorization from DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, taking only a few hours to set up and execute. They are used by the CTN technical staff to broaden the testing base by including representative samples of the many systems and applications used by CTN participants. They also allow the CTN staff to gain feedback from many industry and government interpretations of the Standards, to increase the base of participation in the CALS initiative, and to respond, in a timely manner, to the many requests for help that come from participants. Participants take part voluntarily and are benefited by receiving an evaluation of their latest implementation (interpretation) of the Standards, interacting with the CTN technical staff, gaining experience in use of the Standards, and developing increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test reported in this QSTR was to analyze Litton Computer Services' interpretation and use of the CALS standards in transferring technical publications data. Litton used both Interleaf and Agfa Compugraphics software systems to produce data in accordance with the Standards and delivered it to the CTN technical staff on a 9-track magnetic tape.

2. Test Parameters

Test Plan: AFTB 90-14

Date of Evaluation: October 22, 1990

Evaluators: Air Force CALS Test Bed
HQ AFLC LMSC/SBC
Wright-Patterson AFB, OH

Data Originator: Litton Computer Services
29851 Agoura Road
P.O. Box 6013
Agoura Hills, CA 91376

Data Description: LTACFIRE Technical Manual Plan
1 document declaration file
1 text file

Data Source System:

Text/SGML	Sun Microsystems Computer Agfa Compugraphics Interleaf

Evaluation Tools Used:

1840A	SUN 3/280 CTN Tapetools (v1.0) UNIX Agfa Compugraphics CALS
SGML	Cheetah Gold 486 Exoterica XGML Agfa Compugraphics CALS

Standards Tested: MIL-STD-1840A Notice 1 (1840A)
MIL-M-28001 (28001)

3. 1840A Analysis

3.1 External Packaging

Both tapes arrived at the Air Force Test Bed enclosed in a box IAW ASTM D 3951. The exterior of the box was not marked with the required magnetic tape warning label, MIL-STD-1840A, para. 5.3.1.3.

The tapes were not enclosed in a barrier bag or barrier sheet material as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed a lack of the required label indicating the recording density as required by MIL-STD-1840A, para. 5.3.1. Some 9-track tape units require this BPI to be set manually. Enclosed in the box was a packing list showing all files that were recorded on the tape.

3.2 Transmission Envelope

The 9-track tapes received by the Air Force Test Bed contained MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

The 1840A Tape was run through the AFTB TAPETOOL utility version 1.1. Both tapes contained errors in the tape labels. There were three "Invalid record size encountered" errors on each tape. All of the errors are shown in Appendix A, section two, Tape Scan Log.

The errors relate to the tape label Record Length field for Type D files. Type D files contain variable length records that do not span blocks. All of the Type D files written on the tape were flagged with an illegal value for Record Length. The D001, D001G001, D001T001 files were expected to be Type D according to MIL-STD-1840A. The CTN TAPETOOL Software is expecting a value of 260 in the Record Length field but encountered a record length of 256. MIL-STD-1840A para. 5.2.1.3 requires the variable record size be a maximum of 256 bytes. ANSI X3.27 para. 7.2.3 further states that the length of a Record Control Word (RCW) must be included in a Measured Data Unit (MDU) record length computation. This adds four bytes to the 256 for an MDU total of 260 bytes. ANSI X3.27 para. 8.5.2.6 states that the Record Length field for Type D files shall contain the maximum length of an MDU. While MIL-STD-1840A permits variable length records, some software

programs are sensitive to the number 260 because it is used to limit the record size when unblocking data. Some systems need this value to declare the maximum allowable record size as an attribute of a file when it is created.

3.2.2 Declaration and Header Fields

No errors were reported in the declaration and header fields on the tape constructed with the Agfa Compugraphics software.

Six errors were found in the Document Declaration File header of the tape created with the Interleaf software. In Document Declaration File D001, an Invalid change level and two Invalid date changes were flagged.

MIL-STD-1840A, para. 5.1.1.2 shows the change level as "ORIGINAL". On the tape created with the Interleaf software, the change level was "NONE".

The next errors in the Document Declaration File were the date of issue (**dteisu**) and date of transfer (**dtetrn**). The tape had "NONE" in these blocks. MIL-STD-1840A, para. 5.1.1.2 specifies that these records should contain the date of issue and date of transfer of the document in the form "**YYYYMMDD**".

The last error in the Document Declaration File was the file count (**filcnt**). This record is to contain the actual number and types of files included on the tape. The **filcnt** record contained "NONE" when it should have reflected "**1T, 1G**".

The last error was in the textual data file header. The text file identifier (**txtfilid:**) should have contained the letter "**W**" indicating that all text was contained in one file. This is required in MIL-STD-1840A, para. 5.1.4.1 and table II.

4. SGML Analysis

Both text files from these documents were tested using the Software Exoterica XGML parser. The text file created by the Agfa Compugraphics software contained 63 errors. These errors all relate to graphic calls which were not included with the file.

The text file created by the Interleaf software did not contain any errors.

The document was also read into the Agfa Compugraphics CAPS CALS program. No errors were noted during the read operation on the tape. The files were run through the parser (SOBEMAP) in the CAPS CALS. The parser errors related to the graphic call outs which were not included with the tape in the file created with the Agfa software.

Both text files were run through the Agfa Compugraphics CAPS software to create screen displays of the text. Both documents were successfully displayed on the screen after the first line of the d001t001 files was changed from **<doc>** to **<body>**. The screen displays were not exactly as the provided hard copy. This was due to the different FOSI used by the AFTB.

5. Conclusions and Recommendations

In summary, the MIL-STD-1840A tape from Litton Computer Services was basically correct. The tape could be read properly using the CTN TAPETOOL Software. The tape label errors may cause other software systems to read the data from the tape improperly. The errors in the MIL-STD-1840A headers were minor and should be corrected easily.

Errors during the parsing operation were caused by incomplete files being sent on the tape. The graphic files were not included and therefore generated errors.

The Litton tapes provide both the Air Force Test Bed and Litton personnel a valuable learning tool.

6. Appendix A - Tape Tool Report Logs

6.1 Tape Catalog

CALS Test Network Tape Evaluation - Version 1.1

MIL-STD-1840A Tape Evaluation Catalog

Mon Sep 10 12:57:45 1990 Document File Set Directory: /cals/tapetool2/Set014

Page: 1

File Name	File Type	Record Type	Record Length
d001	Document Declaration	D	00256
d001g001	DTD	D	00256
d001t002	Text	D	00256

6.2 Tape Validation Log - Agfa Compugraphics

CALS Test Network Document File Set Validation - Version 1.1

MIL-STD-1840A Imported Document File Set Validation Log

Checking file count...
No errors were found.
File Count verification complete.

No errors were encountered in document d001.

No errors were encountered during validation.

MIL-STD-1840A File Set Validation Complete.

6.3 Tape Validation Log - Interleaf

CAIS Test Network Document File Set Validation - Version 1.1

MIL-STD-1840A Imported Document File Set Validation Log

Found file: d001
Renaming Document Declaration file: d001
Extracting 1840A Document Declaration header records...
Validating Document Declaration header records...

srcsys: Interleaf, Inc. Cambridge MA
srcdocid: This is a test tape
srcrelid: NONE
chglvl: NONE
***** ERROR (MIL-STD-1840A-5.1.1.2) - Invalid change level encountered.**
dteisu: NONE
***** ERROR (MIL-STD-1840A-5.1.1.2) - Invalid date format encountered.**
dstsys: NONE
dstdocid: NONE
dstrelid: NONE
dtetrn: NONE
***** ERROR (MIL-STD-1840A-5.1.1.2) - Invalid date format encountered.**
dlvacc: NONE
filcnt: NONE
ttlcls: NONE
doccls: NONE
doctyp: NONE
docttl: NONE

3 error(s) were encountered during header validation.
Saving Document Declaration header file: d001_hdr

Found file: d001g001
Renaming DTD file: d001g001
Extracting 1840A DTD header records...
Validating DTD header records...

srcdocid: This is a test tape
dstdocid: NONE
notes: NONE

Saving DTD header file: d001g001_hdr
Saving DTD data file: d001g001_dtd

Found file: d001t001
Renaming Text file: d001t001
Extracting 1840A Text header records...
Validating Text header records...

srcdocid: This is a test tape
dstdocid: NONE
txtfilid: BODY
***** ERROR (MIL-STD-1840A-5.1.4.1) - Invalid value for txtfilid.**
doccls: NONE
notes: NONE

1 error(s) were encountered during header validation.
Saving Text header file: d001t001_hdr
Saving Text data file: d001t001_txt

Checking file count...
***** ERROR (MIL-STD-1840A-5.1.1.2) - Actual Text file count does not match filcnt record. Actual => 1, Expected => 0.**
***** ERROR (MIL-STD-1840A-5.1.1.2) - Actual DTD file count does not match filcnt record. Actual => 1, Expected => 0.**
***** NOTE - Correction made in new Document Declaration header file.**
File Count verification complete.

A total of 6 error(s) were encountered in document d001.

A grand total of 6 error(s) were encountered during validation.

MIL-STD-1840A File Set Validation Complete.

6.4 Tape Scan Log - Agfa Compugraphics

CALS Test Network Tape Evaluation - Version 1.1

MIL-STD-1840A ANSI Tape Import Log

Allocating /dev/rmt0...

/dev/rmt0 allocated.

VOL1VOL001 AGFA CG 3

Label: VOL1
Volume Identifier: VOL001
Accessibility:
Owner Identifier: AGFA CG
Label-Standard Version: 3

HDR1D001 00010001000100 90140 00000 000000

Label: HDR1
File Identifier: D001
File-Set Identifier:
File Section Number: 0001
File Sequence Number: 0001
File Generation Number: 0001
File Generation Version Number: 00
Creation Date: 90140
Expiration Date: 00000
Accessibility:
Block Count: 000000
System Code:

HDR2D0204800256 00

Label: HDR2
Recording format: D
Block Length: 02048
Record Length: 00256
Buffer-Offset Length: 00

***** ERROR (FIPS PUB 79;7.6.3) - Invalid variable record size encountered.**
Header => 00256, Expected => 260
Variable record length includes 4 bytes for RCW.

********** Tape Mark **********

Actual Block Size Found = 2048 Bytes.

********** Tape Mark **********

<<<<<<<< PART OF LOG REMOVED HERE >>>>>>>>

HDR2D0204800256 00

Label: HDR2
Recording format: D
Block Length: 02048
Record Length: **00256**
Buffer-Offset Length: 00

***** ERROR (FIPS PUB 79;7.6.3) - Invalid variable record size encountered.**
Header => 00256, Expected => 260
Variable record length includes 4 bytes for RCW.

********** Tape Mark **********

Actual Block Size Found = 2048 Bytes.

********** Tape Mark **********

<<<<<<<<< PART OF TAPE LOG REMOVED HERE >>>>>>>>>>

HDR2D0204800256 00

Label: HDR2
Recording format: D
Block Length: 02048
Record Length: **00256**
Buffer-Offset Length: 00

***** ERROR (FIPS PUB 79;7.6.3) - Invalid variable record size encountered.**
Header => 00256, Expected => 260
Variable record length includes 4 bytes for RCW.

********** Tape Mark **********

Actual Block Size Found = 2048 Bytes.

********** Tape Mark **********

<<<<<<<<<< PART OF TAPE LOG REMOVED HERE >>>>>>>>>>

```
############ End of Volume        ##############

############ End Of Tape File Set ##############

Deallocating /dev/rmt0...


Tape Import Process terminated with 3 errors.
```

6.5 Tape Scan Log - Interleaf

```
CALS Test Network Tape Evaluation - Version 1.1

MIL-STD-1840A ANSI Tape Import Log

Allocating /dev/rmt0...

/dev/rmt0 allocated.

VOL1CALS01                                                        3

  Label: VOL1
  Volume Identifier: CALS01
  Accessibility:
  Owner Identifier:
  Label-Standard Version: 3

HDR1D001            CALS0100010001000100 90165

  Label: HDR1
  File Identifier: D001
  File-Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0001
  File Generation Number: 0001
  File Generation Version Number: 00
  Creation Date:  90165
  Expiration Date:
  Accessibility:
  Block Count:
  System Code:

HDR2D0204800256                                  00

  Label: HDR2
  Recording format: D
  Block Length: 02048
```

Record Length: **00256**
Buffer-Offset Length: 00

***** ERROR (FIPS PUB 79;7.6.3) - Invalid variable record size encountered.**
Header => 00256, Expected => 260
Variable record length includes 4 bytes for RCW.

********** Tape Mark **********

Actual Block Size Found = 2048 Bytes.

********** Tape Mark **********

<<<<<<<<<< PART OF TAPE LOG REMOVED HERE >>>>>>>>>>

HDR2D0204800256 00

Label: HDR2
Recording format: D
Block Length: 02048
Record Length: **00256**
Buffer-Offset Length: 00

***** ERROR (FIPS PUB 79;7.6.3) - Invalid variable record size encountered.**
Header => 00256, Expected => 260
Variable record length includes 4 bytes for RCW.

********** Tape Mark **********

Actual Block Size Found = 2048 Bytes.

********** Tape Mark **********

<<<<<<<<< PART OF TAPE LOG REMOVED HERE >>>>>>>>>

HDR2D0204800256 00

Label: HDR2
Recording format: D
Block Length: 02048
Record Length: **00256**
Buffer-Offset Length: 00

***** ERROR (FIPS PUB 79;7.6.3) - Invalid variable record size encountered.**
Header => 00256, Expected => 260
Variable record length includes 4 bytes for RCW.

********** Tape Mark **********

Actual Block Size Found = 2048 Bytes.

********** Tape Mark **********

<<<<<<<<< PART OF TAPE LOG REMOVED HERE >>>>>>>>>

********** Tape Mark **********

********** Tape Mark **********

########## End of Volume CALS01 ##########

########## End Of Tape File Set ##########

Deallocating /dev/rmt0...

Tape Import Process terminated with 3 errors.

7. Appendix B - XGML Parser Log

No significant errors reported on either tape.